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ABSTRACT

This study was designed to explore the influences of visual context upon sentence comprehension in young children. Three-, four-, five-, and six-year-old children were presented with various linguistic tasks under varied visual context constraints. Four context conditions--no visual context, a helpful pictured context, a helpful visual context acted out, and a misleading pictured context--were used in testing sentence comprehension. It was hypothesized that younger children's performance would be most affected by varying visual context and that fewest errors would result with helpful context, more with no context, and the greatest number with confusing context. The findings supported the hypothesis. In discussing the implications of these findings for language instruction (and performing language therapy), the experimenter concludes that teaching language through context manipulation of communication demand situations may prove more profitable than present attempts to teach language rules directly. (Author/LG)

MEASURING CHILDREN'S DEPENDENCE UPON VISUAL CONTEXT

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Sociolinguistic Research in Communication Development

The line of research reported in this paper assumes that man's social and linguistic behaviors can be described by systems of rules. Such rules intend no prescriptions (Thou shalt not kill; Use "as" instead of "like".) about how men should behave. They simply illustrate regularities in behavior. Insofar as man's behavior is not random, rule systems can describe it parsimoniously and powerfully.

Linguists have profitably employed this proposition in constructing grammars--sets of rules to describe how men order sentences. Some sociologists have employed similar tactics in describing social behaviors. Erving Goffman (1964) describes such rules in a manner superficially reminiscent of etiquette books.

Researchers interested in how children learn to talk have often used the research strategy of describing apparent rules exhibited in their speech behavior. The major focus to date has been psycholinguistic: Researchers such as Roger Brown, David McNeil, Paula Menyuk, and others have described children's linguistic performances in light of what grammatical rules the child adheres to at particular stages of development.

A parallel research direction has been sociolinguistic: Researchers such as Dan Sobin, Courtney Cazden, and Lois Bloom have been interested in variations of linguistic performance which are primarily due to social variance. Put another way, this line of research (of which the present paper is a part) is concerned with the effects of communication situations upon children's speech performance.

Children's Dependence on Context

For several years, I have been sparing with one particular problem area within the sphere of sociolinguistic studies in communication development--children's dependence upon surrounding visual context in communication. Several theorists have observed that children are tightly bound to what they see. On many occasions, this dependence aids communication, since children can point to objects then are unable to name, or demonstrate processes which they lack knowledge to describe in mature, grammatically acceptable fashion. I have attempted to explore the development of this contextual dependence by presenting children with various linguistic tasks under varied visual context constraints. Some of the constraints were designed to aid performance by providing "clues" to correct responses; others were designed to hinder performance by providing misleading "clues". Basically, the

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prototype context conditions have been the following:

1. Helpful Visual Context. In this condition, a child is asked to perform a task, and some visual referent related to the task is simultaneously shown to him. In such a situation, the child can combine his grammatical knowledge with visual situational cues to deduce a correct answer.

2. No Visual Context. In this condition, there is no helpful object present. The child must comprehend the task and produce the linguistic performance required without contextual aid.

3. Confusing Visual Context. In this condition, a visual referent is shown the subject, as in condition 1, but the referent is intentionally misleading. In this condition the child must choose between conflicting linguistic and contextual cues.

In addition to specific aims in particular studies, two general hypotheses guided this research: 1. That younger children's performance would be more affected by varying visual context than would that of older children; and 2. That fewest errors would result with helpful context, more with no context, and the greatest number with confusing context.

Answers to Questions

In the first experiment employing these conditions, three and four-year-old children responded to questions about everyday objects (glass, spoon, pencil, etc.,). In the "helpful" condition the object itself was shown the subject as the question was asked. In the "no-context" condition the object was shown to the child but put out of sight before the question was asked. In the "confusing" condition, the child was shown one object (for example, a spoon) and asked about a different object ("What do you do with a pencil?").

In some portions of the study there appeared to be an age-by-context interaction in the predicted direction, but it was not statistically significant. Perhaps lack of significance was caused by age groups not sufficiently discrete from each other. Perhaps the context variations had little effect because, though they provided a reminder of the subject matter of the question, they provided no hint about a possible "right answer" (as opposed to "wrong").

In any case, the data provoked me sufficiently to try a second study.

Sentence Comprehension

In this study,[2] four age groups of children (3, 4, 5, 6) were presented with a sentence comprehension task using "reversible-passive" sentences, a construction known to be difficult for children. A sample item:

> Experimenter: Lucy is kissed by Charlie Brown. Who is doing the kissing?

In the "helpful" condition, children were shown a picture depicting the action (Charlie Brown kissing Lucy on the cheek). In the no-context condition, no picture was shown. In the confusing context condition a misleading picture was shown. (In the example above, the misleading picture would show Lucy kissing Charlie Brown on the cheek). Subjects were carefully instructed to respond to the meaning of the sentences, and warned that the pictures might try to trick them.

Results revealed that three-year-olds' performance was fine with helpful picture but deteriorated when the picture was absent. All older children were quite successful in both helpful and no-context condition. We reported

Percentages of Correct Responses by Age Group

	3	4	5	6	7
Helpful Context	.88	1.00	.97	1.00	1.00
No-Context	.30	.79	.64	.76	.88

no statistical analyses because of the "perfect" cells, but no statistics are needed to demonstrate the salience of the difference between three-year-olds and everyone else in the no-context condition.

The confusing context condition fooled everybody. Even seven-year-olds chose the picture over the sentence more than 90% (percent) of the time. Perhaps this condition was so difficult because the picture suggested a "right" answer. Perhaps the difficulty was due to the straightforwardness of the picture--compared to a sentence which required some thought to decode. Another possibility is that the verbal performance of naming an actor other than the one pictured proved an obstructing variable. This last possibility is being examined by a study now in progress, in which subjects are asked to "act out" the sentence using toys and dolls.

Whatever the causes, the variations of context condition seem a more important variable in some contexts than in others. The research problem which this suggests is: what kinds of conditions make visual context vary in importance as sociolinguistic determiners of children's speech performance.

Variables Influencing Importance of Context

The last study to be reported here attempted (with only partial success) to address itself to these issues. Since the major differences in previous research had been between three-year-olds and everyone else, this study employed three-year-olds and five-year-olds as subjects. Since task difficulty may have been a factor in previous results, test materials included both active-declarative and reversible-passive sentences of similar (and counterbalanced) content:

Active: Lucy kisses Charlie Brown.

Passive: Charlie Brown is kissed by Lucy.

Since the nature of the visual context (objects vs. pictures) may have an effect, we included (along with no-context and helpful-picture conditions--the misleading condition was omitted) a condition in which the experimenter "acted out" a sentence with small dolls as he presented the sentence to the child.

Finally, the study examined responses to both imitation and comprehension tasks. It was predicted that in animation task, which requires less personal involvement in the processing of the stimulus sentences than a comprehension task, children would be likely to depend less upon context. Similarly, since imitation is likely to be an "easier" task than comprehension, this variable might speak to the relationship between task difficulty and dependence on visual context.

Results revealed that 1. five-year-olds were more successful than three-year-olds in all tasks. ($p < .001$) 2. Passive sentences were more

Age	Imitation	Comprehension
3	.58	.66
5	.90	.88

difficult to repeat ($p < .001$), but not to comprehend than their active counterparts. 3. The imitative performance for reversible passive sentences

Sentence Type	Imitation	Comprehension
Active	.	.77
Passive	.63	.88

was lower for three-year-olds only (age by active passive interaction, p= .026). 4. Context conditions caused significant variation of performance,

Imitation Only

Age	Active	Passive
3	.75	.41
5	.95	.86

(p= .006) in the comprehension task, but there was no difference between the "helpful picture" and the "helpful activity with dolls" conditions.

Comprehension Only

Age	No-Context	Picture	Activity with Dolls
3	.52	.60	.79
5	.77	1.00	.87

An "eyeball" of this data suggests a possible interaction with age which is not statistically significant (p= .152). 5. In the imitation task, differences between context conditions are not significant (p=.103) and insofar as then may exist they are opposite to what might have been expected: performance is highest in the no context condition!

Discussion

Older children do better than younger ones, and perhaps (p= .15) are less troubled by context variations: We are still cloudy on this issue. Whereas task difficulty (active vs. passive) is quite important for imitation, the context conditions fail to have much effect upon repetition performance. In fact imitation may be easier (p= .10) without context. The performance is purely verbal and may be accomplished with no overt thought of meaning, so it is possible that "helpful" context simply gets in the way.

There are many unresolved puzzles, but the following proposition are supportable:

1. Variations of visual context affect sentence comprehension for both active and reversible passive sentences.

2. Pictured visual context is about equally as helpful as acting out the context with dolls.

3. Confusing context hinders performance of all children.

4. So far, no significant effect of these context variations upon sentence repetition has been demonstrated. Presumably, context is most important when the meaning of the sentence must be consciously processed to arrive at a correct answer.

In addition, I suspect future studies may yet establish a stable age by context interaction for three and five-year-old groups. The role of task difficulty remains problematic.

These findings may have implications for language instruction. Presenting sentences which are new to a child along with some helpful visual context may aid comprehension and thus stimulate grammatical development. On the whole, the concept of teaching language (and performing language therapy) through context manipulation of communication demand situations may prove more profitable than present theoretically vacuous and empirically refutable attempts to teach language rules directly.

Footnotes

[1]Robert Hopper, "Communicative Development and Children's Responses to Questions." SM, March 1971, 1-9.

[2]Robert Hopper and Leslie M. Miller, "Children's Dependence upon Visual Context in Sentence Comprehension." SM, June 1972, 140-143.